M-6754
REPETIDO

INSTRUCTION MANUAL

REGULATED POWER SUPPLIES

LFS-47 SERIES

SPECIFICATIONS AND FEATURES

MP MASTER
MA28356

DC OUTPUT — Voltage regulated for line and load. For voltage and current ratings see table I below.

TABLE I

MODEL	VOLTAGE RANGE	MAXIMUM CURRENT (AMPS) AT AMBIENT TEMPERATURE		
		40°C	50°C	60°C
LFS-47-2	2 ± 5%	150.0	142.5	120.0
LFS-47-5	5 ± 5%	150.0	142.5	120.0
LFS-47-6	6 ± 5%	126.0	120.0	107.0
LFS-47-12	12 ± 5%	64.5	61.5	55.0
LFS-47-15	15 ± 5%	52.5	50.0	44.5
LFS-47-20	20 ± 5%	40.0	38.0	34.0
LFS-47-24	24 ± 5%	33.5	32.0	28.5
LFS-47-28	28 ± 5%	29.0	27.5	24.5
LFS-47-48	48 ± 5%	17.0	16.0	14.5

Current range must be chosen to suit the appropriate maximum temperature. Current ratings apply for entire voltage range.

REGULATED VOLTAGE OUTPUT

Regulation (line) . . . . . 0.1% from 95 to 132 VAC or 187 to 265 VAC or 260-370 VDC.

Regulation (load) . . . . . 0.1% from 0 to full load.

Ripple and Noise . . . . . 15 mV rms, 75 mV peak-to-peak for LFS-47-2, -5 and -6; 20 mV rms, 150 mV peak-to-peak for LFS-47-12 through LFS-47-28; 35 mV rms, 200 mV peak-to-peak for LFS-47-48 (20 MHz bandwidth measurement system). Ripple specifications apply for output terminals floating or with either positive or negative terminal grounded.

Temperature Coefficient . . . . . 0.03% per °C

Remote Programming

External Resistor . . . . . Nominal 1000 Ohms/volt output. Increasing resistance increases output voltage. Use a low temperature coefficient resistor to assure most stable operation.

Programming Voltage . . . . . One-to-one voltage change. The programming supply must have a reverse current capability of 2 ma min.

Remote Sensing . . . . . Provision is made for remote sensing to eliminate the effect of power output lead resistance on DC regulation. Sensing leads should be a twisted pair to minimize AC pickup. A 10 µf elect, capacitor may be required between output terminals and sense terminals to reduce noise pickup. An additional capacitor may also be required across the load to further reduce noise pick up; the value of this capacitor will depend upon the particular application.

OVERSHOOT — No overshoot under conditions of power turn-on, turn-off, or power failure.

AC INPUT — 95 to 132 volts AC at 47 to 440 Hz, or 187 to 265 VAC at 47 to 440 Hz. (Refer to connection diagrams for proper connections.) Where applicable, regulatory agency approval applies only for input voltages up to 250 VAC and for input frequencies in the range 47-63 Hz. Leakage current in the ground connection may exceed the limits allowed by the agencies at frequencies above this range.

DC INPUT — 260 to 370 volts DC (unit must be wired in the 187 to 265 VAC configuration). Where applicable, regulatory agency approval only applies for input voltages up to 350 VDC.

EFFICIENCY — LFS-47-2 55% minimum, LFS-47-5 through LFS-47-15 75% minimum, LFS-47-20 through LFS-47-48 80% minimum.

INRUSH LIMITING — Turn on inrush current will not exceed 75 amps peak.

OVERLOAD PROTECTION — Automatic electronic current limiting circuit limits the output to a preset value, thereby providing protection for the load as well as the power supply. The current limit characteristic exhibits a region of constant current behavior (down to approximately 50% Vo (nominal)) followed by a foldback region.

HOLD UP TIME — LFS-47-2, LFS-47-5 and LFS-47-6 models will remain within regulation limits for at least 16.7 msec after loss of AC power when operating at maximum output power and 105 VAC input at 60 Hz, (or when configured for 220 V input: 20 msec holdup when operating at maximum output power and 210 VAC input at 50 Hz).

RECOMMENDED FUSING — 30 A, 250 V normal blow fuse in AC line (not supplied in unit) for 110 VAC input. Use 15A, 250 V for 220 VAC input. If IEC type fuses are used, value should be 75% of recommended current rating.

INPUT AND OUTPUT CONNECTIONS — See outline drawing for location. AC input, sensing and remote on/off connections are made via PC board mounted terminal blocks. Ground connection is made via a chassis mounted terminal. DC output connections are made via heavy duty bus bars.

REMOTE TURN-ON/TURN-OFF — T^2L compatable signal enables remote turn-on/off of the power supply. A voltage of 2.8 to 5.0 V applied between "+R" and "-R" will initiate turn-off. Open circuit or short circuit condition, or a zero to 0.5 volt signal will cause turn-on.

COOLING — Unit is fan cooled. Fan failure circuit shuts down inverter in event of fan failure or interference of fan rotation. LED overtemperature indicator will light. AC input power must be momentarily interrupted to restore output after fault condition is corrected.

OPERATING AMBIENT TEMPERATURE RANGE AND DUTY CYCLE — Continuous duty from $0^{o}C$ to $+60^{o}C$ ambient with corresponding load current ratings for all modes of operation. Unit will start up at $-10^{o}C$, but may not meet published specs until internal heating raises temperature to $0^{o}C$.

STORAGE TEMPERATURE — $-55^{o}C$ to $+85^{o}C$

DC OUTPUT CONTROL — Screwdriver voltage adjust control permits adjustment of DC output voltage. See outline drawing for location of control.

WARRANTY — 1 year warranty from date of shipment . . . materials and labor

PHYSICAL DATA

Size	8.875" x 5.0" x 4.875"
Weight	9 lbs. 3 oz. net; 12 lbs. 3 oz. shipping
Finish	Gray, FED.STD.595 No. 26081

MOUNTING — One mounting surface. Forced air cooling will permit multiple mounting positions.

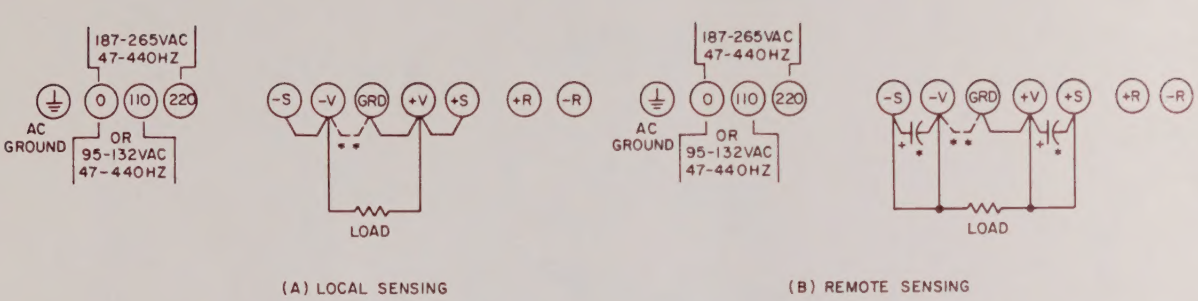
OVERVOLTAGE PROTECTION — Standard on all models. When output voltage increases above the maximum overvoltage detect level of the unit and inverter drive is removed, input power must be removed. Maximum overvoltage detect level: LFS-47-2 4.2 V, LFS-47-5 6.85 V, LFS-47-6 7.6 V, LFS-47-12 14.9 V, LFS-47-15 19.3 V, LFS-47-20 26.5 V, LFS-47-24 31.5 V, LFS-47-28 36.7 V, LFS-47-48 60.6 V. Allow 2.5 min. for the overvoltage detector to reset and then reconnect input power for normal operation of the unit.

ISOLATION RATINGS — Input terminals to output: 3750 V rms
Input terminals to ground: 1500 V rms
Output terminals to ground: 500 V rms

ACCESSORIES

Rack Adapters	Rack adapters LRA-15 and LRA-17, with or without chassis slides, are available for all LFS units.
Standard Power Systems	All LFS power supplies can be integrated into the Lambda standard power system assembly which provides panel mounted pilot light, voltage control, fuse and output metering for the power supply as desired.

EMI — LFS-47 power supplies can be made to meet FCC docket 20780, class A conducted EMI compliance with the addition of LAMBDA filter ARA-00-021 or NEMIC-LAMBDA filter MBS-1220-33/L1. Filter required for meeting VDE 0871 class A compliance with 187-250 VAC input voltage is LAMBDA filter ARA-00-023 or CORCOM filter No. 15ET1.



* A 10MF, ELECT., CAP. MAY BE REQUIRED.
** FOR NEGATIVE GROUND, DISCONNECT JUMPER FROM TERMINALS GRD AND +V AND RECONNECT TO TERMINALS GRD AND -V.

Figure 1. DC Output Connections

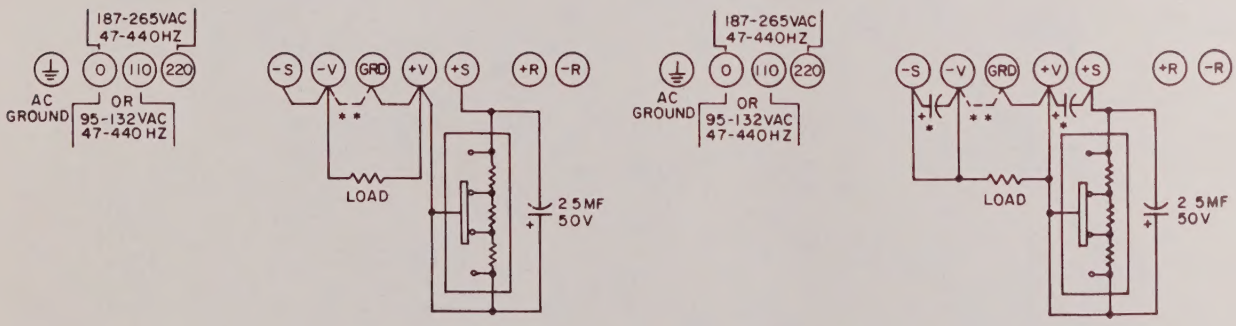


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Figure 2. Programmable Voltage, With External Resistor

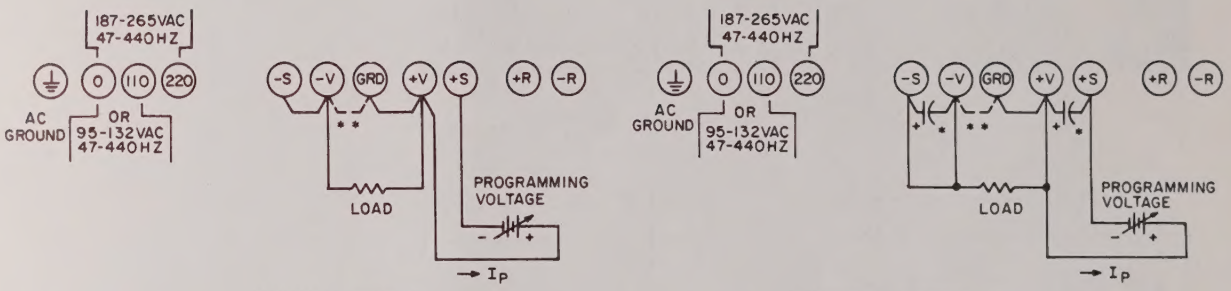

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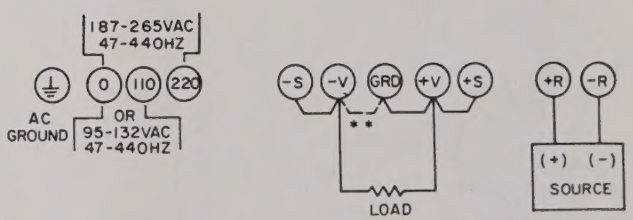
Figure 3. Programmable Voltage, With External Voltage Source



SOURCE AT 2.8 TO 5V WILL INITIATE TURN-OFF;
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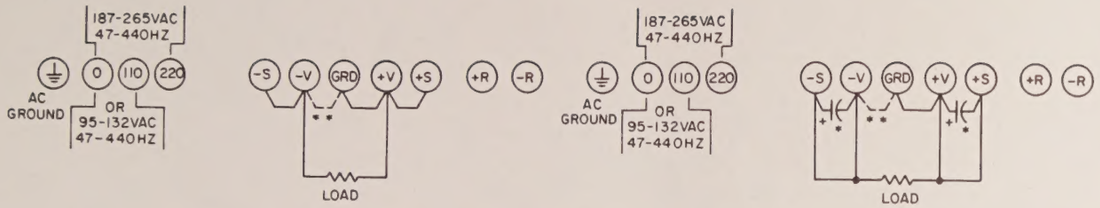
Figure 4. Remote Turn-on/Turn-off



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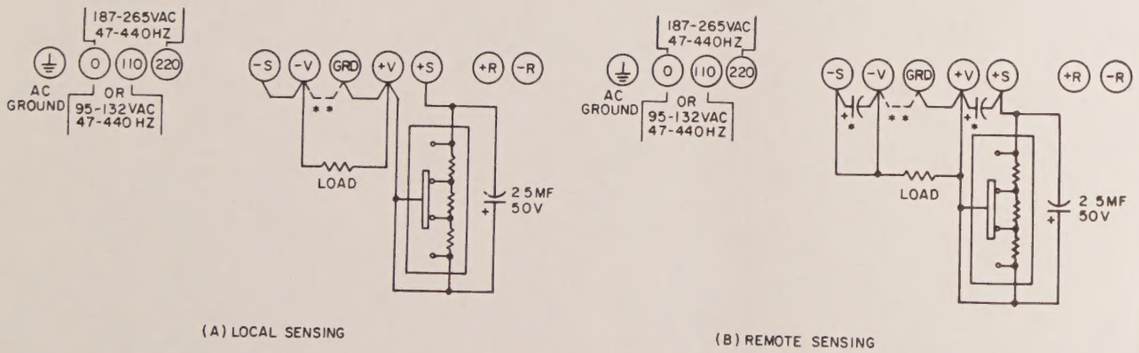

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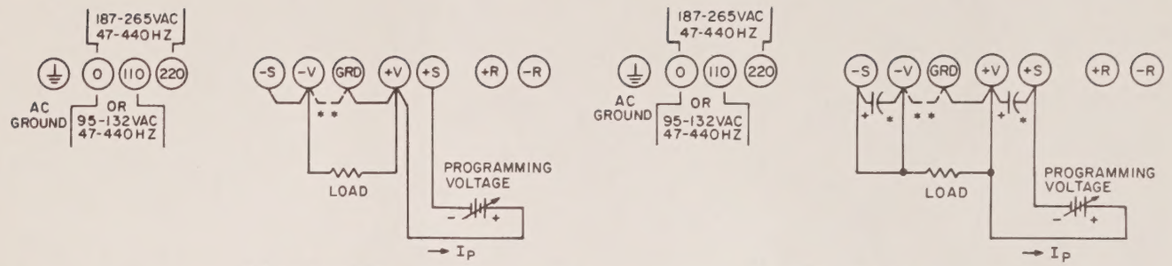

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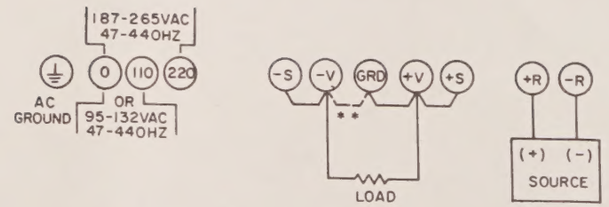

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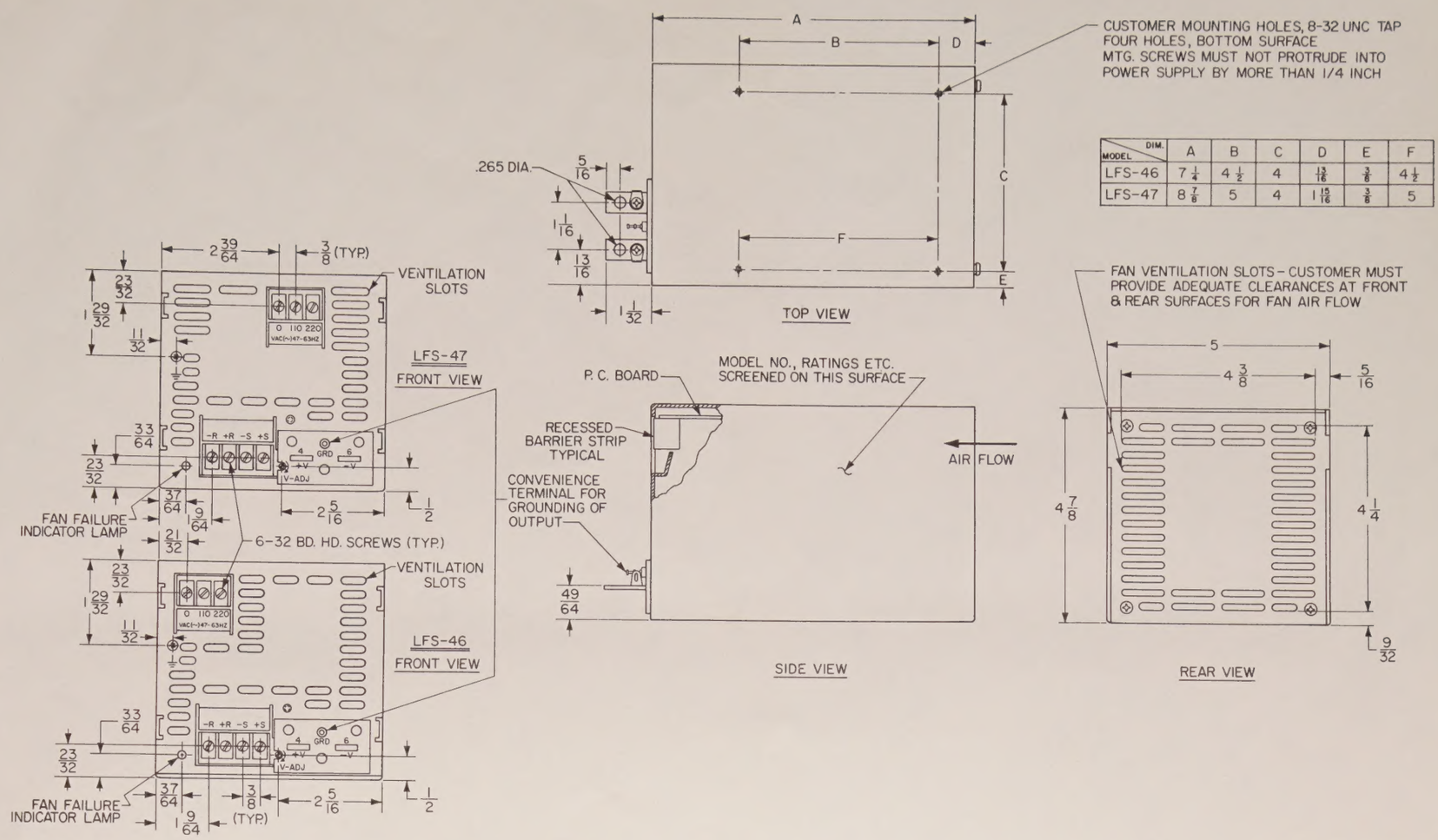
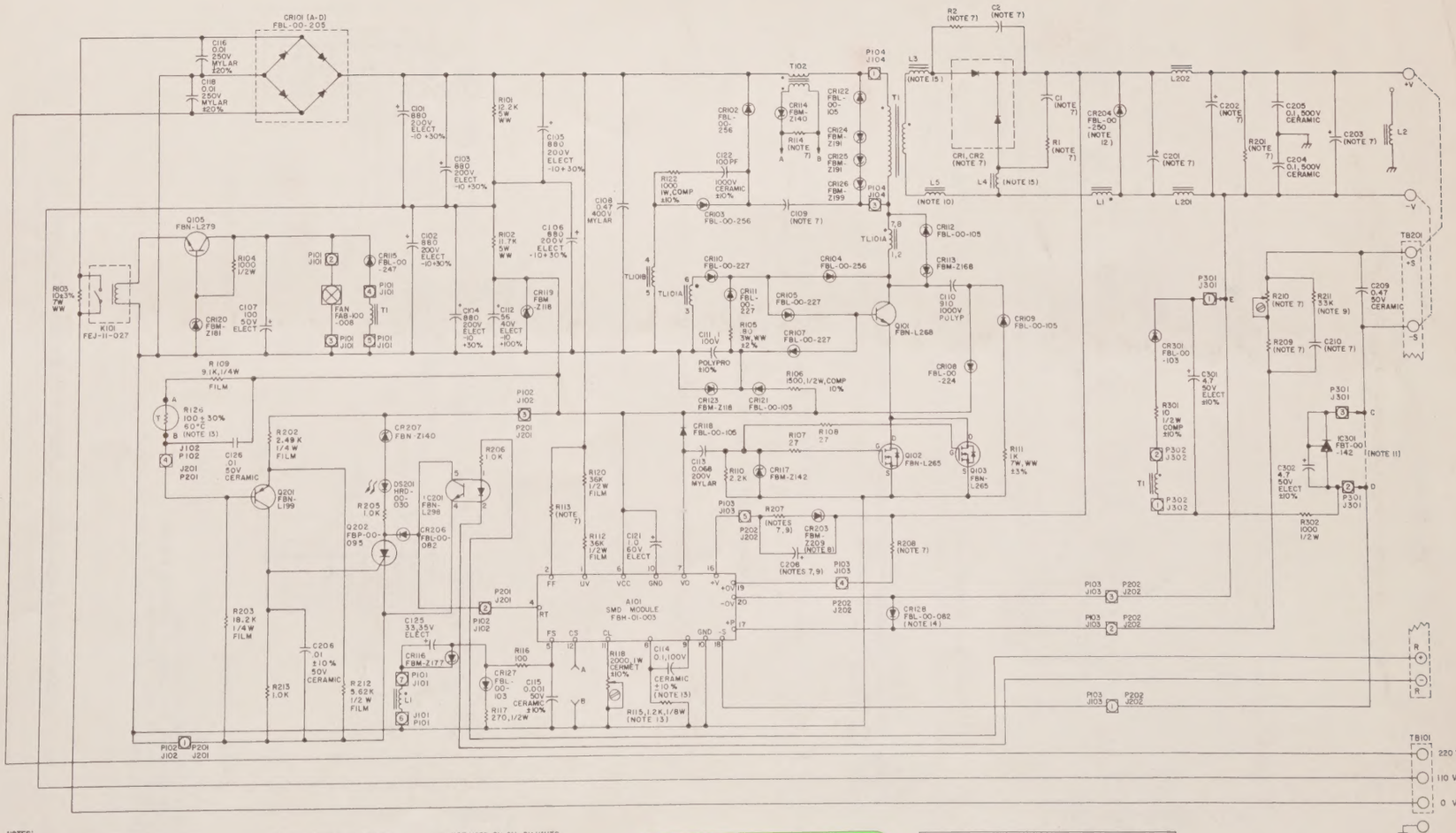

CUSTOMER MOUNTING HOLES, 8-32 UNC TAP
FOUR HOLES, BOTTOM SURFACE
MTG. SCREWS MUST NOT PROTRUDE INTO
POWER SUPPLY BY MORE THAN 1/4 INCH
.265 DIA
TOP VIEW
VENTILATION SLOTS
LFS-47
FRONT VIEW
FAN FAILURE INDICATOR LAMP
6-32 BD. HD. SCREWS (TYP.)
LFS-46
FRONT VIEW
P. C. BOARD
MODEL NO., RATINGS ETC. SCREENED ON THIS SURFACE
RECESSED BARRIER STRIP TYPICAL
CONVENIENCE TERMINAL FOR GROUNDING OF OUTPUT
AIR FLOW
SIDE VIEW
FAN VENTILATION SLOTS - CUSTOMER MUST PROVIDE ADEQUATE CLEARANCES AT FRONT & REAR SURFACES FOR FAN AIR FLOW
REAR VIEW

MODEL \ DIM.	A	B	C	D	E	F
LFS-46	7 1/4	4 1/2	4	13/16	3/8	4 1/2
LFS-47	8 7/8	5	4	1 15/16	3/8	5

Outline Drawing



NOTES:
1. RESISTORS ARE 1/4W CARBON FILM WITH VALUES IN OHMS UNLESS OTHERWISE NOTED
2. CAPACITOR VALUES ARE IN MICROFARADS UNLESS OTHERWISE NOTED
3. RESISTOR TOLERANCES: CARBON FILM ±5%, WIREWOUND ±5%, FILM ±1% UNLESS OTHERWISE NOTED
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5. SYMBOLS:
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   - ↑ INDICATES CLOCKWISE ROTATION OF SHAFT
   - ⊸ INDICATES TERMINAL ON PRINTED WIRING BOARD OR TERMINAL BOARD
   - ⊘ INDICATES ADJUSTMENT OR CALIBRATION CONTROL
   - ✳ SEE INSTRUCTION MANUAL.
6. DESIGNATIONS ARE LAMBDA PART NO.
7. SEE TABLE II FOR COMPONENT VALUES.
8. CR203 USED ON 48V ONLY; JUMPER FOR ALL OTHER UNITS.
9. C208, R207, R211 USED ON 12V-48V ONLY, JUMPER ON 2V-6V UNITS; R211 IS 39K ON 28V & 48V UNITS.
10. L5 USED ON 2V, 5V AND 6V UNITS ONLY
11. JUMER C-D ON 5V-48V UNITS
12. NOT USED ON 2V-6V UNITS
13. C114 IS 0.01 MF, 50VDC, R115 IS 220 OHMS AND R108 IS RATED AT 50°C ON 2V UNIT.
14. CR128 IS NOT USED ON 2V UNIT
15. L4 ONLY USED ON 28V AND 48V UNITS; L3 ONLY USED ON 2V, 5V, 6V, 12V AND 15V UNITS.

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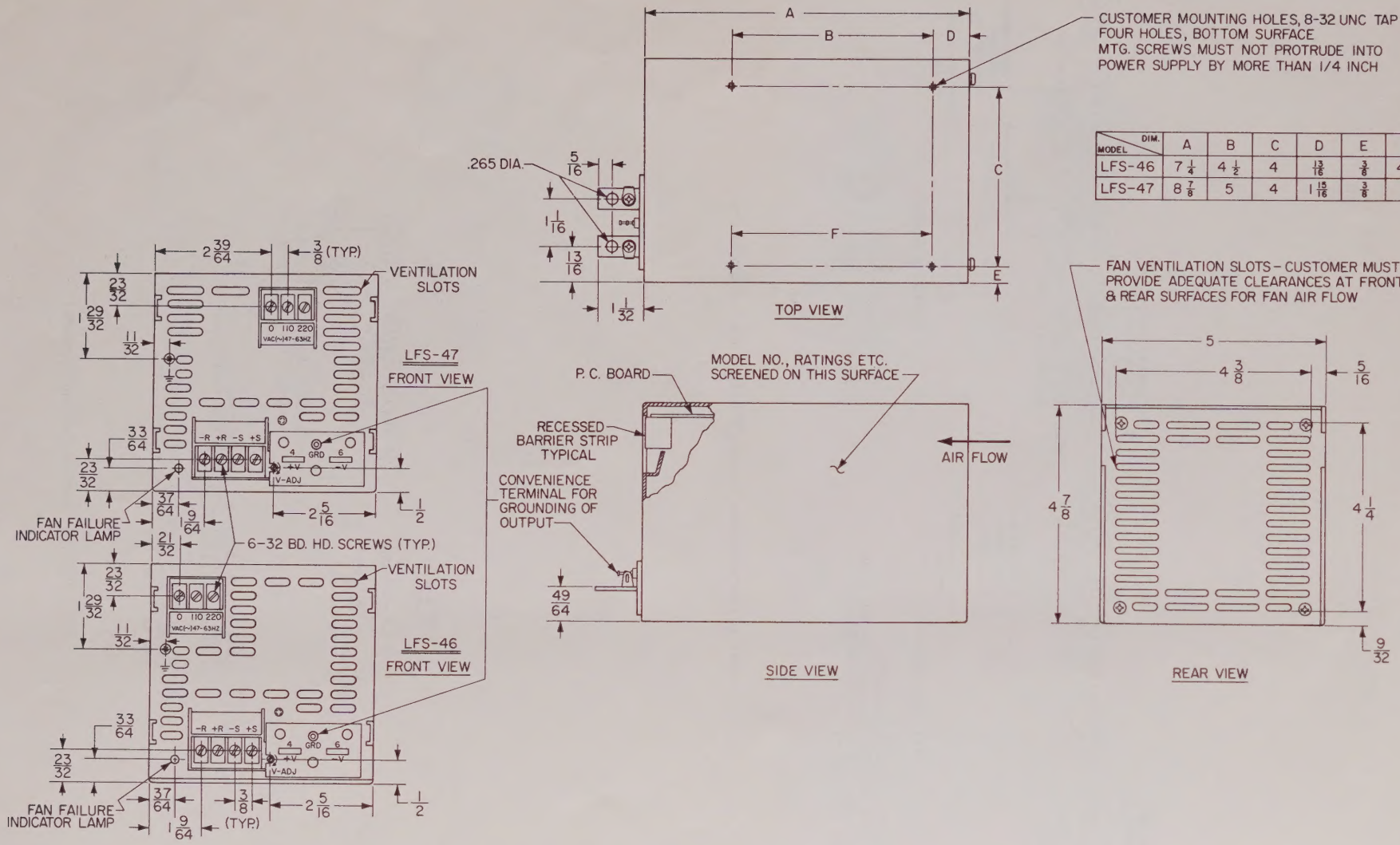
MP MASTER
MA28356

SCHEMATIC DIAGRAM
REGULATED POWER SUPPLY
LFS-47

LAMBDA
ELECTRONICS
MELVILLE, NEW YORK
DIVISION OF VERCO INSTRUMENTS INC



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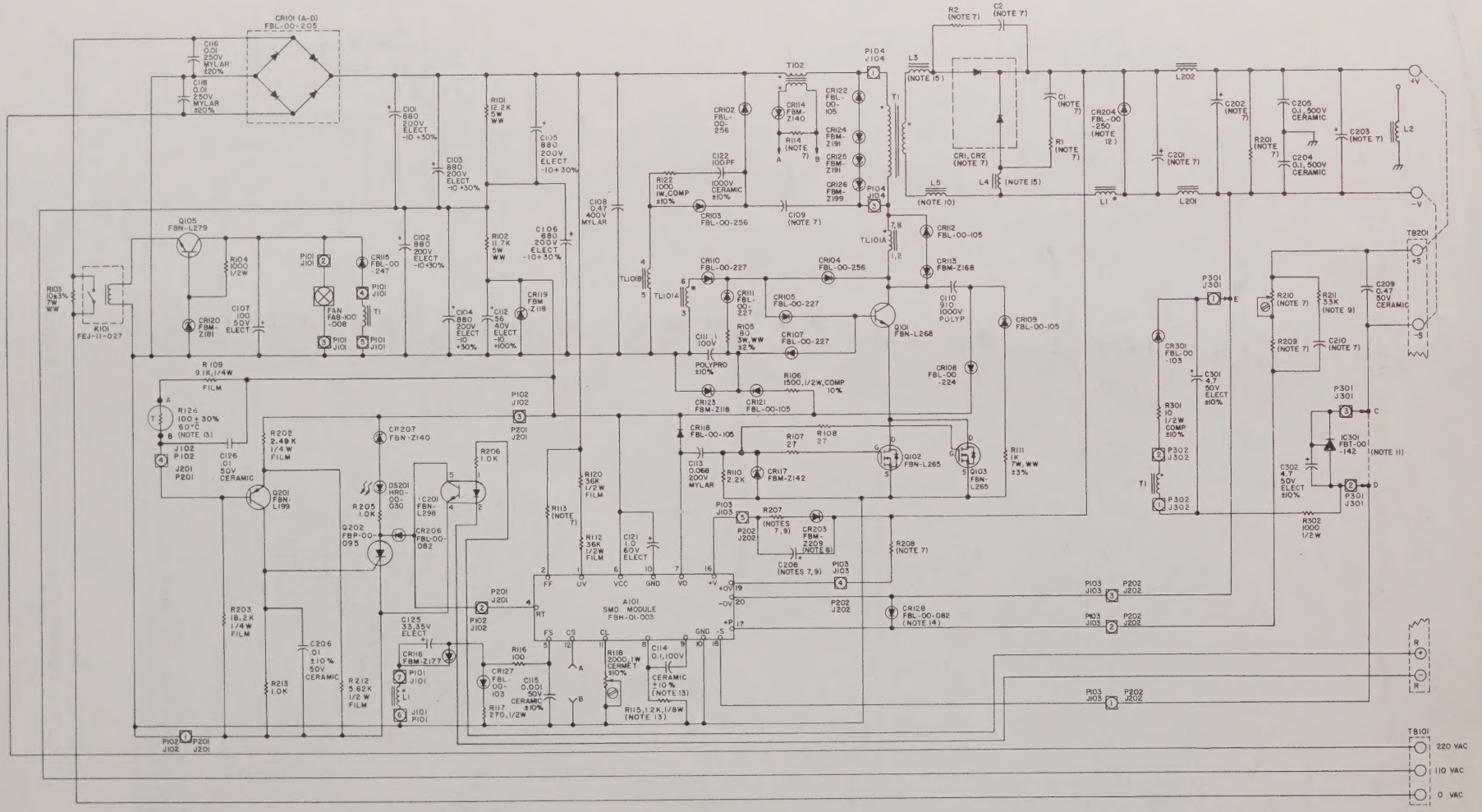

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